AMENDMENT

In the Specification:

Page 7, paragraph beginning on line 9:

The premium UPS topology is the true on-line or double conversion UPS illustrated in Figure 3. Input 301 is connected to rectifier <u>302</u> ~~301~~, which rectifies incoming AC power to DC power to supply the internal DC bus 308 of the UPS. Output inverter 304 takes the DC power from DC bus 308 and produces AC power to support the critical load connected at output 307. Battery 303 is attached to DC bus 308 and is float charged during normal operation. When the input power is out of the tolerance limits, battery 303 provides power to support inverter 304 and the critical load. Some advantages of this configuration include: load isolation, output voltage stability, output voltage and frequency independence, capability for separate inputs for the normal and bypass source, backfeed prevention, and mature and well-understood technology.

Page 8, paragraph beginning on line 1:

The steady DC voltage produced by rectifier <u>302</u> ~~303~~ or battery 303 is used to power output inverter 304. The inverter creates a completely new waveform for the critical load connected at output 307. In the double conversion online UPS the critical load output waveform has no necessary relationship to the incoming utility waveform. Consequently the output waveform remains independent of utility waveform disturbances.

Page 13, paragraph beginning on line 11:

AC power to be delivered to the critical load then passes through one winding of transformer 506, which is connected in series with the UPS bus <u>516</u> ~~56~~. The purpose of

transformer 506 will be discussed in more detail below. The power for the critical load then passes to the critical load by way of capacitor 514, which serves as a filter capacitor to reduce small high frequency components on the output waveform and also serves to minimize the effects of load transients on the output voltage.

Page 16, paragraph beginning on line 3:

One method of commutating the utility disconnect is to use only the main inverter 511 ~~411~~. When a fault is detected that causes the voltage at the input 501 to change such that the line current will increase in magnitude, the main inverter controller 521 commands the main inverter switches to a state that applies a voltage that causes the inverter current to approach the load current. When the inverter current equals the load current, line current will have been forced to zero, and commutation will have been achieved. In practice, it is only necessary for the controller 521 to have knowledge of the direction of the line current and to select the inverter switch that provides the same voltage polarity as the line current polarity. Although the resulting voltage transient seen at output 515 is somewhat extreme, the short duration required is such that the load is not disrupted. Nor should the inverter experience overcurrent stress. Typical SCRs used for static switch applications will commutate and be capable of blocking applied voltage in a few hundreds of microseconds.

Page 16, paragraph beginning on line 16:

The critical load disruption may also be minimized using **the series inverter controller 517 controlling** only the series inverter 507. However, the limited ratings of series inverter 507 require that the fault be detected early before the voltage at input 501 is out of the range in which

the series inverter has sufficient capacity to force commutate the input SCRs. Another alternative for minimizing disruption to the critical load is to use the series inverter at its maximum capacity and make up the additional energy required to null the current flow through the SCRs using the main inverter. Because the series inverter is also used to null the current flow, the requirements on the main inverter are reduced, thereby reducing the output voltage distortion seen by the critical load and likely providing faster commutation.

Page 18, paragraph beginning on line 9:

Another possible clamp for a self commutated fast utility disconnect in Fig. 9. The clamping circuit comprises four diodes 901-904 and capacitor 905. The anode of diode 901 is coupled to the input side of the fast utility disconnect 906, and the cathode is coupled to a first terminal of capacitor 905. Similarly, the cathode of diode 903 is coupled to the input side of fast utility disconnect 906, with the anode coupled to a second terminal of capacitor 905. Diode 902 has its cathode coupled to the first terminal of capacitor 905 and its anode coupled to ground, while diode 904 has its anode coupled to the second terminal of capacitor 905 and its cathode coupled to ground. In operation, a transient voltage excursion at the input side of fast utility disconnect 906 will cause diode 901 (for positive voltage excursions) or diode 902 (for negative voltage excursions) to conduct and allowing capacitor 905 to absorb the energy of the transient voltage excursion, and excess energy is dissipated to ground through diodes 904 (for positive voltage excursions) or diode <u>902</u> ~~903~~ (for negative voltage excursions).